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A NEW *RHYACOSIREDON* (CAUDATA) FROM WESTERN MEXICO

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While collecting near the western part of the state of México, about ten kilometers east of the Michoacan border, I discovered an ambystomid salamander which retains the larval characters of dentition in the transformed adults. In consequence, I am associating the species with the genus *Rhyacosiredon* Dunn. I am fortunate in having a series of specimens of *Rhyacosiredon altamirani* Dugès of various ages from the type locality, as well as from other localities, for comparison.

Rhyacosiredon rivularis sp. nov.

Holotype: EHT-HMS No. 16388; collected about 13 km. west of Villa Victoria, México, in a small stream in pine forest, Sept. 11, 1938, by Edward H. Taylor.

Paratypes: EHT-HMS Nos. 16387, 16389 - 16393 collected with type.

Diagnosis: Differs from *Rhyacosiredon altamirani* in having a shorter, thicker body, a shorter, less attenuated tail, relatively smaller limbs and a differently shaped head. The dorsal coloration is more or less blackish; laterally the color is less intense showing darker markings on the lower part of sides, and on tail. Ventral surface blackish-gray with small dark spots or reticulations.

Description of the holotype: Adult female; head moderately deep, the transverse dorsal outline strongly curved; snout distinctly truncate; eyes moderate, the length (3 mm.) distinctly shorter than the length of snout (5. 2 mm.); distance between nostrils (5. 8 mm.) much less than narrowest distance between eyes (8. 5 mm.); greatest width of head (20 mm.) less than length of head (24 mm.); tip of snout to nuchal fold (19 mm.) much less than length of head; several longitudinal folds on throat; numerous pits on head in regions medial to eyes, in temporal region and on chin; a pair of fleshy folds on edge of lower lip, the median ends separated by a distance of 3. 5 mm.; upper lip with a lobule or fold; no horny border on inner edge of lips; maxillary-premaxillary tooth series, 31-34 begins near the posterior level of choanae; about the same number of mandibular teeth; vomeropalatine series separated near anterior inner edge of choanae; the palatine series, 5-3 in a straight line, near median edge of choanae; the vomerine series, 12-12 (somewhat curved outward) diagonal, extending forward more than half the distance between level of choanae and premaxillary teeth and separated medially by a distance almost as wide as length of one series; floor of mouth thickened with one or two folds on outer edges; near the anterior part is a narrow area consisting of longitudinal lamellæ superimposed on the thickened floor. (This condition is present in *altamirani* but the longitudinal lamellæ are difficult to discern); choanæ large, more than twice as long as wide.

Body short, thick, with eleven costal folds between axilla and groin; tail fin well developed arising at a point above the posterior end of anus, reaching its greatest depth about midway of tail (7 mm.), the fin somewhat thickened at its anterior end, thin posteriorly; limbs strong, well-developed, when apressed overlapping the length of arm from elbow; fingers in following ascending order of size; 1, 4, 2, 3; toes: 1, 5, 2, 3-4; the digits pointed and with no, or only a trace of, horny tips; (first finger abnormally bifurcate on left side and on right foot the second and third toes are abnormally united at base); a large inner and smaller outer metacarpalor metatarsal tubercle on hand and foot.

Color in life: Above blackish, the sides grayish, the ventral coloration still lighter gray; sides and tail with black spots or reticulations not conspicuous unless submerged in water; ventral surface with darker flecks and reticulations; a few lighter flecks on ventral surfaces, under side of tail and tip of snout somewhat lighter.

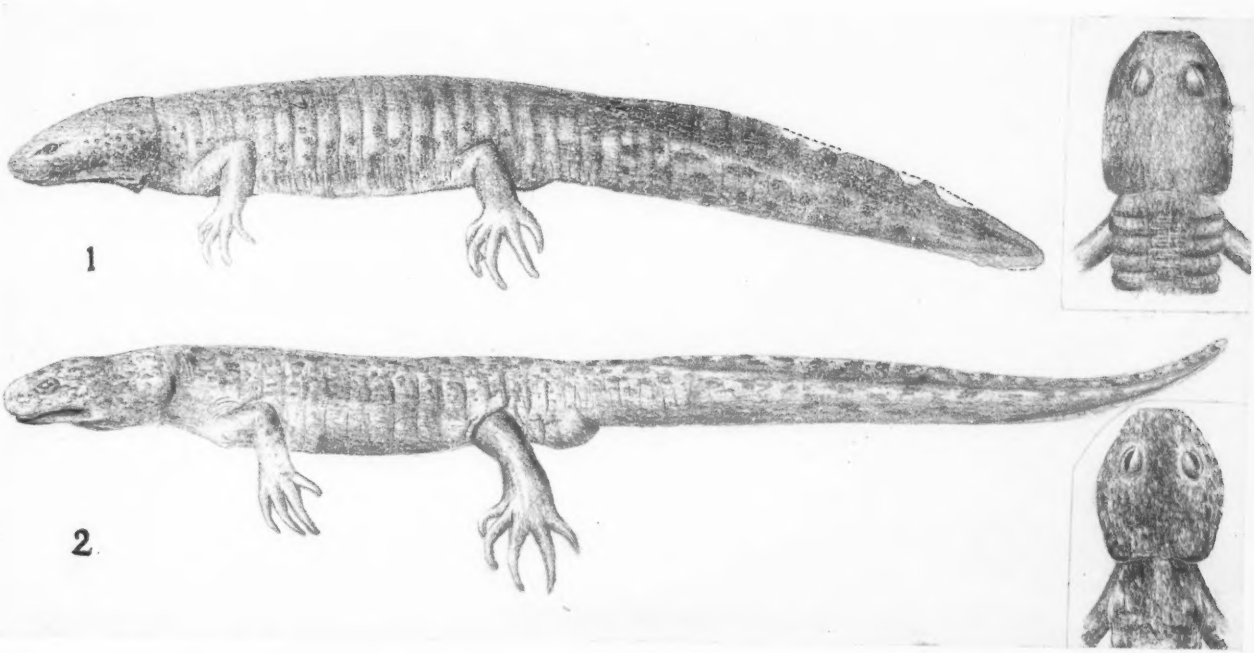

Fig. 1 *Rhyacosiredon rivularis* sp. nov.
Fig. 2 *Rhyacosiredon altamirani* (Duges). EHT-HMS No. 16432, Lake Zempoala, Morelos.

Table of Measurements of *Rhyacosiredon rivularis* sp. nov.

No.	16388	16392	16393	16387	16391	16390	16389
Sex	♀	♀	♀	♂	♀	♀	♂
Snout to anterior end of vent	77	81	86	82	80	80	76
Snout length	5.2	5.5	6.5	5.7	6.1	6	5.2
Snout to foreleg	26	26.5	30	27	26	28	24
Axilla to groin	38	44	45	42	43	41	38
Tail from anterior end of vent	87	85+	85	90	72*	77*	70*
Depth of head	15	15	16	15	17.5	14	14
Head width	20	21	21.5	21	21	19	19
Head length	24	24	25	25	26	23	22
Arm	26	25	29	28	28	28.5	26
Leg	28.5	30	34	31	32	30	28
Depth of tail	16	16	17	16	17	16	15.5

* Regenerated.

Variation: The seven specimens agree in most essential details. Five are females. These differ from the males in having the cloacal region slightly more protuberant, the walls lined with radiating folds. Males have the walls thickened, granulate or papillate in character. The tails of three specimens have had the terminal third regenerated and in these the ground color is much lighter.

The lateral line organs are present on head and chin as evidenced by stomata-like openings. There are usually four such stomata on the breast forming a curved series; these may be obsolete. One of the specimens has the darker color of the back broken into very small brownish-black flecks, suggestive of the typical coloration of *R. altamirani*. Some of the specimens show slightly more horny deposit on the tip of the digits.

The maxillary-premaxillary tooth series, the palato-vomerine tooth series are as follows: No. 16387, 31-33, 5+10—7+11; No. 16389, 30-30, 5+12—6+11; No. 16390, 31-30, 6+12—5+12; No. 16391, 32-30, 5+11—7+12; No. 16392, 7+13—23 (the series continuous on one side); No. 16393, 15-26, 3+8—3+10 (here many of the teeth are missing. It may be a very old specimen).

Remarks: The small stream flowing through a pine forest in which the type series of *Rhyacosiredon rivularis* was taken was about 4 feet wide and probably averaged a foot (or less) deep. The water was very clear. The stream was followed for perhaps two kilometers.

There were very few quiet pools. As no specimens were found I concluded that no ambystomid salamanders inhabited the stream. Somewhat later in crossing the stream farther up, I discovered several individuals lying quiescent at the bottom of a pool of water about two feet deep. Retracing my steps to camp to get a net, I returned to the pool. After obtaining the seven specimens a heavy rain made it impossible to see the other animals at the bottom, and shortly after, the turbidity prevented further examination of the stream. No larvae were obtained.

For purposes of comparison I include a figure of *Rhyacosiredon altamirani* Dugès. The characteristic body shape shown in the figure of *Rhyacosiredon rivularis* is invariable in the type series. The shape of the head of the two forms is quite different, and constant.

RANA VIRGATIPES IN DELAWARE

ROGER CONANT
Zoological Society of Philadelphia

The statement of Stejneger and Barbour in the fourth edition of their check-list (1939, p. 48) that *Rana virgatipes* Cope is "not known in Delaware or Maryland" prompts me to publish a note on the distribution of this species. This, perhaps, should have appeared in print some time ago, but I had been planning to include it in a contemplated report on the herpetofauna of the Del-Mar-Va Peninsula, an end toward which I have been doing considerable field work during the past three years.

Eight specimens of *virgatipes* were collected May 2, 1936, in a swamp five miles south of Millsboro, Sussex County, Delaware. Only one of these was preserved; it is now no. 2518 in the collection of the Academy of Natural Sciences of Philadelphia. The same locality was visited again on June 23, 1939, however, and five additional specimens were secured (A N S P nos. 21519-23). A comparison of

these specimens with a number of other *virgatipes* from several localities in New Jersey shows that they agree quite closely. The most noticeable differences are that the Del-Mar-Va frogs average smaller, their backs are lighter, and the small dark spots between the longitudinal stripes are more in evidence.

The prairie-like swamp in which the frogs were found is roughly square and about a quarter of a mile across. It contains much sphagnum and cat-tails, and rotting logs, chiefly pine, are scattered about on its surface. The water was knee-deep during our 1936 visit, but in 1939 the water table had dropped so much that only scattered, muddy pools remained. Signs of drought were much in evidence. There were large areas of desiccated sphagnum and we found innumerable dead crayfish and frogs of various kinds, including *virgatipes*. The colony of this species seemed much smaller than previously. We collected eight specimens in casual fashion in less than a half hour on our first visit, but during two hours of diligent search we saw only about twelve and captured five on our second visit. They also seemed more elusive on the second trip, but this may have been due to the higher temperatures which prevailed. Both groups were collected in the late forenoon.

The decrease of water in the swamp seems to have favored *Rana clamitans* at the expense of *virgatipes*. We saw dozens of green frogs, almost all of them quite small and newly transformed, where we failed to see a single one in 1936. *Rana pipiens* appeared to be about equally abundant each time.

On our first visit a brief shower stimulated *virgatipes* into singing. The rain lasted only a few moments, but as the breeze drifted it across the swamp successive frogs voiced their characteristic "hammering" cries, producing the effect of a wave of pounding passing across the area. An almost identical shower occurred during our 1939 visit, but only a few specimens of *Hyla v. versicolor* around the edge of the swamp responded.

Many of the coastal plain endemics are rare in the Del-Mar-Va Peninsula, very probably because of the extensive way in which the soil has been drained and cultivated for so many years. Most of the "pine barrens" species of southern New Jersey may turn up eventually on the Peninsula, but ferreting them out doubtless will consist of trying to find localties which have suffered a minimum of disturbance and which approach original habitats most closely.

FRANZ WERNER 1867-1939

WALTER MOSAUER*

To every herpetologist of today the name Werner implies a long list of publications which, because of their number, importance, and diversity of subject, inevitably appear in the bibliography of papers of wider scope in our field.

To those of us, however, who had the privilege of knowing personally the author of such a prodigious number of herpetological publications, the name means more. It conjures up the picture of a little old man, of slight build, talking very rapidly and with the fire of enthusiasm, now and then nervously stroking his rather scraggly beard, informal and witty in conversation, always kind and ready to give advice. Professor Werner does not look the part of the outdoor man and explorer, but his record more than disproves his appearance. In a long series of expeditions into southeastern Europe and Asia Minor (1894-1936), Algiers and Morocco (1928, 1930), Egypt (1899, 1904), the Egyptian Sudan (1905, 1914), Uganda (1905), Syria and Cyprus (1935) he has proved his great ability as field collector and observer and his willingness to endure the unavoidable hardships of expedition work.

When I saw him last in Vienna, he was "straining at the leash" to get out again into the field, away to Morocco or Greece or Syria. In a recent letter, he proudly states that in the summer of 1936 he visited fourteen islands of the Aegean Sea, four of which had never previously been explored by a zoologist. Altogether he has collected on forty of these islands; often he cruised on small native boats over rough seas and negotiated difficult landings. He hopes to make it a full half hundred, and we hope that he will succeed. We cannot but admire deeply the spirit of this man who in his seventieth year might well be content with the harvests of a rich and industrious life, but instead drives on to new adventures in science and travel. Let us briefly review his scientific career which has added so much to the world's knowledge of herpetology.

*This manuscript was tentatively submitted to me before the unfortunate death of my friend Walter Mosauer, as a tribute to Dr. Werner. It is thought advisable to publish it now, without change, even though Dr. Werner died on February 28. *N.*

FRANZ WERNER

Photograph taken at Djebel Zalagh, near Fes, Morocco in 1928

Born in Vienna on the fifteenth of August, 1867, Franz Werner graduated from the Gymnasium (high school plus junior college) in 1888, and then studied Zoology at the University of Vienna. Among his teachers were figures well known in science: Claus and Grobben (whose textbook is still widely used) in Zoology, Wettstein, Kerner, and Wiesner in Botany, the famous Suess in Geology, Neumayr in Palaeontology, and others of equal magnitude. In 1890 he received his doctorate of philosophy and went to Leipzig to study under Leuckart and Marshall. His interest in herpetology originated early: when he was six years old, his father presented him with one of those typical little glass terraria in which a bright green tree frog *(Hyla arborea)* sits on a miniature step ladder and, according to widespread belief, forecasts the weather. A *Lacerta agilis* was soon added to the zoo, and ever since Franz Werner has been a herpetologist.

In 1895 he was appointed Assistant (instructor) at the Imperial Zoological Institute of the University of Vienna. His present physical fitness may be partly due to the fact that for many years he climbed day after day the five stories of marble stairs from the "Aula" (vestibule) of the dignified University building on the Ringstrasse to the institute under the roof. He became Privatdozent (assistant professor) in 1908, Extraordinarius (associate professor) in 1909, and received the title of Ordinarius (professor) in 1919; in 1933 he retired with pension.

In all this time, he worked and published indefatigably in the field of herpetology, chiefly in taxonomy, but without neglecting the biology and anatomy of his favorite subjects. Among his major contributions are a monograph of the Chamaeleontidae, papers on the herpetofauna of the Bismarck Archipelago, of Austria-Hungary and the Occupation territories (part of the Balkans), of the Anglo-Egyptian Sudan, and a synopsis of the families of snakes. His synopsis of the *Colubridae* represents an indispensable addition to Boulenger's catalogue. Many of Werner's technical papers were founded on the rich collections of the museums of Vienna and Hamburg, and of his own expeditions.

Contrary to all too many eminent scientists, Werner was never averse to popular or semi-popular writing, and his efforts along this line did much to spread herpetological knowledge among German-speaking people, to encourage the amateur and terrarium fancier, and to stimulate and inspire young zoologists. Outstanding among his

contributions of this nature is perhaps the herpetological part, in two large volumes, of the famous *Brehms Tierleben* which has brought the thrill of strange animals and far away lands as well as a sound knowledge of every day zoology into countless German speaking homes. Other comprehensive writings by Werner include the volumes on reptiles and amphibians in *Das Tierreich,* in the *Naturwissenschaftlicher Wegweiser* and in Kükenthal's *Handbuch der Zoologie.* Jointly with the Viennese Serologist R. Kraus, he published a standard work on venomous snakes (*Giftschlangen und die Serumbehandlung der Schlangenbisse*). To Krefft's *Das Terrarium,* he contributed a very practical key for the identification of terrarium animals (Berlin, 1926, 2nd ed.).

Werner's zoological publications are not restricted to the field of herpetology. His papers on grasshoppers, mantids, and other orthoptera are considered just as authoritative and significant as those on scorpions and solipugids. His field work in the North African deserts first led him to be interested in these groups.

Many scientific societies count Werner among their prominent members. Besides the Akademie der Wissenschaften and the Zoologish-botanische Gesellschaft in his native Vienna, his affiliations include those of corresponding membership in the Zoological Society of London, and in the Societe Portugaise des Sciences naturelles of Lisbon and also honorary member of the Societe Royale d'Entomologie, Cairo. Just recently American zoologists honored him by electing him Honorary Foreign Member of the American Society of Ichthyologists and Herpetologists.

When I was a high school boy of fifteen or so, I met Franz Werner at the biological supply house in Vienna where I used to browse in admiration of gorgeous Brazilian *Morphos*, huge *Dynastes* beetles, pallid *Proteus anguineus,* and other rare and exciting treasures. I shall never forget the thrill when I was able to purchase a well-mounted specimen of a beautiful sea snake (it was *Pelamis bicolor,* I believe) from Werner's own collection. Ever since that day, all through my medical curriculum, he steadied and fostered my interest in herpetology. He gave ample advice and encouragement concerning the early herpetological expeditions of my friend Wallis and myself to Istria, Dalmatia, and Tunisia; helped by identifying specimens, and placed our first timid attempts at scientific publication in the hands of the editors.

I sincerely wish that he may spend many more years in health and happiness and search for new and beautiful things in our science, and I know that the herpetologists of the globe are joining me in this wish.

On August fifteenth [1938], when Franz Werner is celebrating his seventieth birthday, I hope to be collecting iguanas, basiliscs, anoles, and other delightful creatures in tropical Mexico. For the fact that I am thus happily occupied instead of drilling and filling Viennese molars and canines, I owe a debt of deep gratitude to Franz Werner whose kindly advice and inspiration have shown me the way.

TWO NEW SNAKES OF THE GENUS *THAMNOPHIS* FROM MEXICO

EDWARD H. TAYLOR

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Among the collections made in eastern Hidalgo during 1938 is a small *Thamnophis* which appears to be an undescribed form. In general appearance it strongly resembles a large *Storeria*, but lacks the generic characters for such an association.

Thamnophis halophilus sp. nov.

Type: EHT-HMS No. 5560; Collected about 7 km. north of Zacualtipan, Hidalgo, August 12, 1938, by Edward H. Taylor.

Diagnosis: A small species, lacking distinct dorsal and lateral stripes and without transverse spotting; 8 upper labials; one preocular; three postoculars; temporals $1 + \frac{2}{1}$; scale formula 19-19-17; ventrals 152; caudals 71; anal single. Eye rests on two labials; outer scale row keeled dimly on posterior third of body.

Description of type: Fig. 1. Head distinct from neck; rostral visible above for a distance equal to a little less than half that of the internasal suture; internasals subtriangular, a little wider than long; prefrontals much wider than long, touching two scales laterally; frontal a fifth longer than its distance from the snout; supraoculars a little longer than the frontal; parietals one fourth longer than the frontal; upper labials 8-8, in the following ascending order of size: 3, 2, 1, 4, 8, 5, 7, 6, the fourth and fifth enter orbit; nostril lies between two nasals, the anterior distinctly the larger; loreal trapezoidal, dis-

tinctly longer than high; a large preocular, separated from frontal; three postoculars the middle one distinctly largest; a single large anterior temporal followed by two over one; lower labials 8-10 (the reduction on the right side due to fusion of the third and fourth and the eight and ninth); 4-5 labials touching the anterior chinshields; latter wider but shorter than posterior which diverge and are separated by one or two scales; four scale rows between the third ventral and last lower labial; ventrals 152; subcaudals 71, the fourth and fifth pairs fused into single scales; anal single; scales strongly carinated, save outer row which is weakly keeled on posterior third of body, smooth anteriorly. Scale formula 19-19-17; about back of head, 26 scales.

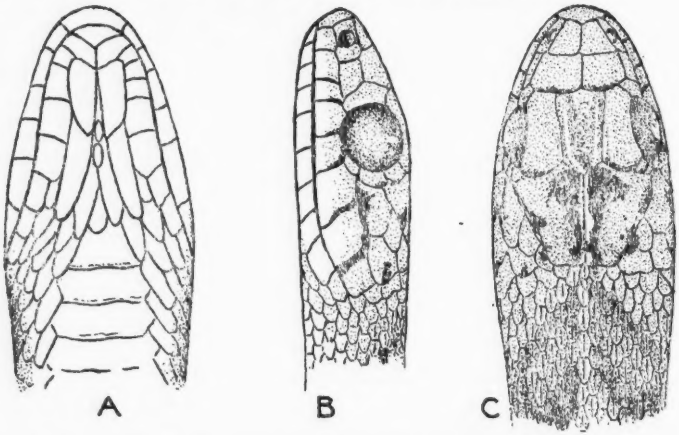

Fig. 1. *Thamnophis halophilus* sp. nov. Type, EHT-HMS No. 5560; 7 kilometers north of Zacualtipan, Hidalgo. Three views of head, x3.

Color in life: Above brownish gray, with a few of the scales partly black on their basal parts; skin black between scales; two large spots, darker on edges, on the nape are separated anteriorly by a narrow light gray line; latter line runs forward and forks at back part of frontal; a pair of elongate darker spots on parietals; a dark fleck on frontal and two on outer edges of parietals; ground color of top of head slightly more brownish gray than body; labials creamy on their lower halves, the sutures edged with black (save first); a small diagonal dark line somewhat behind eye; lower lips and chin cream below, throat

PLATE XIX

Above

Thamnophis halophilus sp. nov.

Type. EHT-HMS No. 5560, Zacualtipan, Hidalgo, Mexico.

Below

Thamnophis eburatus sp. nov.

Type. EHT-HMS No. 5556, Cerro San Felipe, Oaxaca, Mexico.

cream growing uniform dove-gray by the fifteenth ventral and gradually becoming lead-gray to leaden posteriorly; a very fine, slight peppering of darker gray or gray-black visible under the lens.

Measurements: Total length 422 mm.; tail 98 mm.; length of head 16 mm.; width of head 9 mm.; tail divided by total length .23.

Relationship: In certain of the structural characters this species is similar to *Thamnophis phenax* Cope. It differs markedly in color and markings, *phenax* being crossed by 36 brownish-red transverse spots edged with black separated by one scale row, while below it is an unspotted green. The diameter of eye is less than its distance to rostral; the frontal is somewhat longer in proportion to the parietal suture. In *T. phenax* the chinshields are said to be equal and there are no parietal spots.

Thamnophis phenax, according to the type description (Proc. Acad. Nat. Sci. Phila., 1868, p. 134), is apparently a lowland form, "common near Cordova," in the state of Veracruz. Ruthven (Bull. U. S. National Mus. No. 61, 1908, p. 131) states that specimens including the type in the U. S. National Museum bear the label "Orizaba, Cordova," and that he believes the type originated on Mount Orizaba.

The type locality of the present species has an elevation of about 2200 meters. The specimen was found under a rotten pine log.

Thamnophis eburatus sp. nov.

Type: EHT-HMS No. 5556; Collected on Cerro San Felipe, Oaxaca, elevation about 1700 meters, Aug. 18, 1938, by Mrs. Hazel Roberts and Edward H. Taylor.

Diagnosis: Head brownish, dorsum coal black, venter blue-black save on anterior fifth; a lateral zig-zag line, ivory or greenish ivory. Eight upper labials; one preocular, and three postoculars; temporals 1+2; scale formula 20-17-16-15; ventrals 146; single anal; subcaudals 76.

Description of the type: Fig. 2. Part of rostral visible on upper surface of snout equal to more than half the internasal suture; internasal suture longer than that between the prefrontals, the scales about as wide as long; prefrontals much broader than long, touching posterior nasal and loreal; frontal a little longer than its distance from the end of the snout; supraoculars slightly shorter than frontal; parietals distinctly longer than frontals, nostril between two nasals, anterior nasal largest; loreal a little longer than high; a single very elongate

preocular, separated from frontal; diameter of eye equal to its distance from anterior end of nostril; 3 postoculars; temporals 1+2+3; upper labials 8-8; ascending order of size of labials 2, 3, 1, 8, 4, 5, 7, 6; ten lower labials, five touching the anterior chinshields; posterior chinshields longer and more slender than anterior, the posterior pair separated by one or two scales; five scale rows between the third ventral and the last lower labial. Ventrals 146; anal single; subcaudals 76; total length 450 mm.; tail length 118 mm. Scale formula 20 (back of head) 17-16-15; scale rows all strongly keeled.

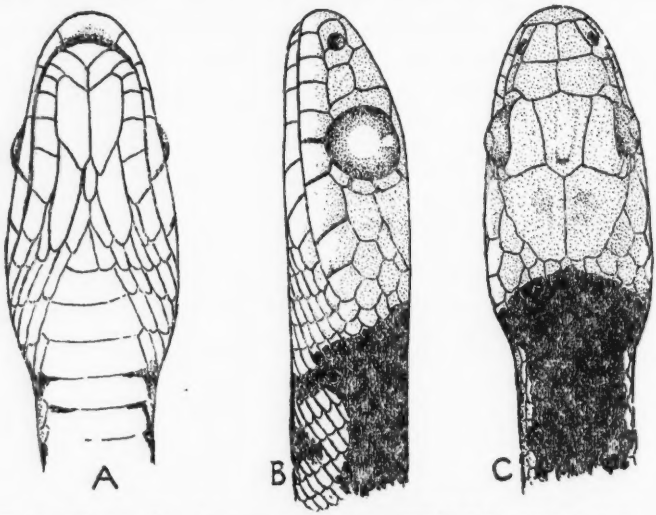

Fig. 2. *Thamnophis eburatus* sp. nov. Type, EHT-HMS No. 5556; Cerro San Felipe, Oaxaca. Three views of head, x3.

Color: Body above, deep black covering about ten dorsal scale rows; the back is bordered laterally by an ivory or greenish-ivory, zig-zag line, extending from level of fifth ventral to tip of tail, covering one or two scale rows. The line is on the second and third rows anteriorly, and the first and second posteriorly; on side of neck and anterior part of body is a series of rather large black spots, separated anteriorly by narrow ivory borders, but more posteriorly they tend to merge into the ventral coloration. Head brown above, yellowish-

brown about jaw angles; upper labials ivory; chin and lower labials white; throat ivory to greenish-ivory, this color continuing back, but very shortly the posterior edge of each ventral becomes black, and on each successive scale the black stripe becomes wider until when the fiftieth ventral is reached the scales are entirely black and continue so to the tip of the tail with only occasional ivory flecks. A slightly darker area on the parietals and a small median black fleck on the posterior part of the frontal; some of the labials black-edged.

Remarks: The type specimen was discovered on the Cerra San Felipe by Mrs. Hazel Roberts, who also assisted in its capture. The elevation here was about 1700 meters. The time was about sundown.

The relationship of the form is with the *eques* group but the striking color pattern readily separates it from any member of that group.

NOTES ON SOME AMERICAN LIZARDS AND SNAKES IN THE MUSEUM OF GOTEBORG*

EMMETT REID DUNN

Andersson (1916, Medd. Göteborgs Mus. Zool. 9) has published notes on the Reptiles of the Göteborg Museum. His remarks on some of the American forms were rather puzzling to me, and Dr. O. Nybelin has very kindly loaned me some of the material.

Sphaerodactylus lineolatus Lichtenstein and Martens

Andersson (p. 5) described two new varieties of *Sphaerodactylus* from "Costa Rica." The type of his *S. homolepis carinatus* (Göteborg 1325) is a young individual of *S. lineolatus*, and the types of his *S. lineolatus imbricatus* (Göteborg 1326, three specimens) are adults of the same species. In this connection I have examined the type of *lineolatus* Lichtenstein and Martens (Berlin 417) from Veragua; of *homolepis* Cope (USNM 14207) from "Nicaragua"; of *argus* Meerwarth (non Gosse) (Hamburg 1733 a) from "Costa Rica," all being conspecific, as is all the other *Sphaerodactylus* material I have seen from Panama, Costa Rica and Nicaragua. I have not seen the type of *millepunctatus* Hallowell from "Nicaragua," but the description indicates that this also is *lineolatus*. Definite local-

* Contributions from the Department of Biology, Haverford College, No. 43.

ities in Nicaragua (6) and in Costa Rica (4) are all on the Atlantic slope. Twenty Panamanian localities indicate its presence all along both coasts, up to 2000 feet at El Valle, and on Taboga, San Miguel, and Saboga Islands.

Boa annulata Cope

Andersson (p. 25) records *Corallus cookii* from La Valencia, Chontales, Nicaragua, as the first North American find. The specimen (Göteborg 1068) is actually *Boa annulata.* It does not have the enlarged internasals of *cookii,* has the distinctive pattern of *annulata,* and has 50 dorsals and 253 ventrals, the tail being imperfect. I have examined 15 specimens of this species, and know of one more. These indicate a range on the Atlantic slope of Nicaragua, Costa Rica, and western Panama; a crossing over to the Pacific side in eastern Panama and presence on the west coast of Colombia, a typical distribution for an animal of the true rainforest. Localities are:

Nicaragua: Rio Siquia, 7 miles above Rama, (Michigan);

Costa Rica: Ontario Farm, lower Reventazon R. (seen there, now in Hamburg); La Castilla, lower Reventazon R. (taken by me and now living in Philadelphia Zoo); Limon (Wettstein, 1934, Sitz. Ak. Wiss. Wien 143, 1, 2, p. 31); Southern part of Atlantic slope, probably Sipurio (USNM, type, Gabb collection).

Panama: Bocas del Toro (ANS); Agua Clara, middle Chagres (two, Clark); Panama, Sabanas (three, Clark); Yavisa, Darien (Clark).

Colombia: San Juan R., Choco (USNM).

A specimen in the Philadelphia Academy from "Jamaica" is probably a banana ship importation from lower Central America. The term "Clark" refers to shipments to me from Dr. H. C. Clark of over 9000 snakes from Panama.

Thamnophis

Andersson (p. 26) records as *Tropidonotus ordinatus* two garter snakes collected at Granada, Nicaragua, by Dr. Bovallius in 1883, and suggests their affinity to *T. eques.* The two are both very young females, showing the navel, and perhaps from the same litter. They are Göteborg 1194, and I shall hereinafter refer to the larger specimen as "A" (total 240 mm.; tail 60; ventrals 140; caudals 70) and to the other as "B" (total 238 mm.; tail 58; ventrals 144; caudals 71).

A scale count follows: upper labials 8, 4th and 5th in eye; lower labials 10, 5 in contact with anterior chinshields; one preocular; postoculars 3 or 4 in "A," 2 or 3 in "B"; one anterior temporal; posterior

temporals 3 in "A," 2 or 3 in "B"; navel at ventral 125 in "A," at ventral 129 in "B"; dorsal scale rows 21-19-17, the fourth row dropping at ventral 11 in "A" to leave 19, dropping at ventral 15-17 in "B."

Ground color cream below, gradually changing to reddish brown above. Ventrals with a black anterior border, somewhat narrower and occasionally interrupted in the median line. Similar borders on subcaudals but much fainter and disappearing towards tip of tail. Top of head olive; a light, black-bordered spot on parietal suture. The dorsal color extends downwards and backwards over the anterior temporal, the 7th upper labial, and the 9th lower labial, and this extension is edged with black behind. It extends from parietals and from three or four nape scales onto the edge of the ventrals, and is edged with black postoriorly, but only as far as the temporals anteriorly; this nape band forms as inverted "V." The labials are cream edged with black, and the cream color extends upwards onto the preocular, the postoculars, and posterior temporals. The black bordering of the fifth upper labial is continuous along the dorsal border. There are no stripes. The body is marked anteriorly with squarish black spots occupying the three middle scale rows, and with lateral black bars, about three scale lengths apart and taking up about one and one-half scale lengths, reaching from the ventral edges to the 9th scale row, and alternating with the dorsal spots. They occasionally reach the dorsal spots, and a pattern similar to that of *Natrix rhombifera* is produced. Posteriorly the lateral bars become shorter both dorsally and ventrally. The dorsal spots break up into two rows with a tendency to alternation.

The specimens are of no previously described form. I therefore designate specimen "A" as the type of

Thamnophis bovallii sp. nov.

I diagnose it as a *Thamnophis* without stripes; with equidistant black lateral bars alternating with dorsal black spots anteriorly; with ventrals black-bordered anteriorly; one preocular; 140-144 ventrals; tail about 25% of total length; a marked lateral head and nape pattern.

This form is allied to *T. praeocularis* Bocourt described from two specimens taken at Belize (1892, Le Naturaliste (2), 6: 278, and 1893, Miss. Sci. Mexique, Rept., p. 770, pl. 56, f. 7). The differences seem to be that *praeocularis* has three preoculars; a narrow dorsal light stripe; the nuchal band is black; the anterior lateral bars are wider; each ventral has two small spots on the anterior edge.

It is also allied to *T. arabdotus* Andrews, (1937, Zool. Ser. Field Mus. 20, 25, p. 357) based on a female from Catmis, Quintana Roo. In this there is "a clear middorsal band three scales wide the whole length"; the ventrals are "punctate bilaterally with black spots"; the nape band extends backward 12 scale lengths; the lateral bars are from the 2nd to the 8th scale rows. Otherwise it is similar to *bovallii.*

Of garter snakes which occur in tropical lowland Mexico, *T. marcianus* has the head pattern and the marked black spotting on the body which characterize the three mentioned above. It has dorsal and lateral stripes, and the spots are not arranged in bars but are square and alternate. It is known from the lowlands of Tamaulipas. *T. phenax,* described from Cordoba, and *T. scalaris,* described from Jalapa, lack the head pattern, and while they are barred, the barring consists of brown areas outlined in black. In the former there are no stripes, in the latter both dorsal and lateral stripes are present. *T. phenax* is known only from Cordoba, *scalaris* is known to occur much higher than Jalapa. *T. phenax* had an immaculate belly and 158-161 ventrals.

Of all these I have seen only *marcianus* and the probable type of *scalaris. T. bovallii* in my opinion is more similar to the former.

Mannhardt and Halter collected a *Thamnophis* at Colorado Bar, Costa Rica, in 1916. I saw it soon after its arrival in the American Museum and noted a similarity to the description of *praeocularis.* When, at the request of the American Museum, I worked over their Mexican and Central American snakes, I was informed that this specimen had been mislaid, but would be forwarded when found. Later it was found, but I was informed that it was new and that the privilege of describing it would be reserved for a member of their staff. There is more than a possibility that this specimen belongs to the species described above.

Thamnophis sauritus chalceus Cope

In this connection it may not be amiss to mention the other *Thamnophis* of Nicaragua and Costa Rica. A form similar to *T. sauritus proximus* is known to me from the following: two in the USNM labeled "Nicaragua"; two in the American Museum from Colorado Bar, Costa Rica; 15 specimens from seven localities in the uplands of Costa Rica. I have taken it at La Palma, at 4500 feet elevation.

It differs from typical *proximus* only in the number of ventrals. Ruthven (1908, Bull. U. S. Nat. Mus. 61) says that of 100 specimens from the United States only two (from New Orleans with 158) had less than 162 ventrals. He records none from south of the United States with more than 161, and some with as low as 150. My La Palma specimen, a female, has 154. The Colorado Bar specimens have 149 and 150. Ruthven (1933, Copeia, p. 96) records a specimen from Cartago, Costa Rica, with 154.

This seems not unworthy of systematic recognition, and the earliest name available is *Prymnomiodon chalceus* Cope (1861, Proc. Acad. Nat. Sci. Philadelphia 12, p. 558). The provenance was supposed to be Siam. The type is ANS 5826, and is a *T. s. proximus* with 152 ventrals. If Yucatan *proximus* turn out to differ in other ways than low ventral count the name *rutiloris* Cope (1885, Proc. Amer. Phil. Soc. 22, p. 388) is available for them. The type specimen, USNM 13906, is from Cozumel Island, and has 150 ventrals.

Coluber piceus Cope

Andersson (p. 28) reports a "*Zamenis flagellum piceus,*" Göteborg 1236, presented with others in 1895 by A. Thulin, with the data "West India or Nicaragua." He says "as all other specimens of this collection (snakes and lizards) live in Central America and not in West India, it is fairly certain that the habitat of this snake was Nicaragua." He mentions by name none of the "other specimens."

The specimen is reported as 1145 mm. long, with 198 ventrals, 109 caudals and 19 dorsals. To this I can add: male; upper labials 8; lower labials 9; one preocular with a small subpreocular; postoculars two; anterior temporals two; posterior temporals two on one side, three on the other; dorsal scale rows 17-19-17-15, the increase to 19 occuring on the right side at ventral 51 by addition of a scale row above the third, which row drops out at ventral 101; the left side is similar but addition and reduction take place about an inch further forward; reduction from 17 to 15 takes place at ventral 125 by the fourth row dropping out; no further reduction occurs anterior to the vent.

The snake is certainly *piceus,* but it is the only known specimen in which reduction of dorsal scale rows from 15 does not take place anterior to the vent, and the second (as Andersson pointed out) with

more than 17 dorsal rows. Ortenburger (1928, Mem. Univ. Michigan Mus. 1) does not cite Andersson's record of *piceus*. He records the dorsal scale formulae of 29 specimens, 22 of which had 17-15-13; six of which had 17-15-12; one (the type) had 19-17-19-15-13.

The form *piceus* occurs within the range of *frenatus*, and many consider it a mere melanistic variety. Aside from the Göteborg specimen, the two are replaced vicariously in western Mexico by *lineatus;* from southern Mexico, through Central America to Venezuela, *lineatus* is represented by *mentovarius*. This specimen is not a melanistic specimen of *mentovarius* as in all known specimens of that species the 4th and 5th upper labials are fused, and 19 scale rows have been reported in American congeners only in *piceus*. I regard Andersson's identification of the Göteborg specimen as correct, but I do not believe that it is from Nicaragua.

BOOK REVIEW

TURTLES OF THE UNITED STATES AND CANADA. By Clifford H. Pope. Alfred A. Knopf, New York: xviii, 343, v, pages, 99 photographs. $3.75.

Lay naturalists and professionals alike will welcome the appearance of this handsome volume on North American turtles. It is extraordinary indeed, considering the comparative wealth of comprehensive compilations on some other orders of interest to American herpetologists that a group as widespread and as genuinely interesting as the Testudinata had to wait so long for their turn.

The present volume is written in the same pleasing popular style as the author's notably successful *Snakes Alive*. Actually, however, it is a well rounded handbook of North American turtles that will be as useful to serious students as to those whose interest is more casual. As such it immediately assumes strategic importance because of the renewed interest in field work, particularly on aquatic forms, that is being sponsored so heartily by modern ecology. Some will regret that it was not prepared in pocket size for convenient use in the field. A striking feature of the book is the excellence of the illustrations, which for the most part are from photographs by Mark Mooney, Jr., of the Zoological Society of Philadelphia. These figures are unfortunately referred to in the text as "plates."

A general introductory chapter sets the stage for the systematic treatment that follows. In the systematic part it is gratifying to find that the major emphasis has been placed on habits, behavior, and allied biological topics, with description essentially restricted to points that are necessary for identification. Keys, which should make identification of all but very young specimens simple, are provided. Advanced students may be somewhat annoyed by the fact that only common names are used for species and subspecies in the keys, and this is further complicated by the fact that no page references are given in the keys. The author has taken pains to point out specific biological topics and problems that are in need of study. Another commendable feature is the fact that simple instructions for the care of pets, particularly of the baby turtles so often sold at amusement centers, are included. The reviewer may be somewhat biased, but it seems to him that the extraordinary and unique morphological specializations for which turtles are famous might have been treated at somewhat greater length.

With respect to the systematic treatment, the reviewer upholds a view that apparently is not shared by the author: that in a general popular or semi-popular treatise it is wise to follow an accepted check-list if one is available. Adequate discussion of taxonomic problems is outside the scope of such a book, and failure to agree with the check-list will inevitably confuse the beginner. Pope's departures from the check-list will strike most readers as extraordinary. The eighteen genera listed in the fourth edition of the check-list have been increased to twenty (two additional genera of sea turtles are recognized), and of the eighteen check-list genera no less than nine have suffered some alteration. Some of these changes are based on unpublished data supplied by co-workers, but others seem highly arbitrary. The complete omission, without any explanation, of some species (e. g. *Chelydra osceola, Amyda agassizzii)* and subspecies *(Kinosternon baurii palmarum, Graptemys pseudogeographica kohnii, Amyda spinifera aspera*) is scarcely understandable. Apparently the author intended to regard *Chelydra rossignonii* as a subspecies of *Chelydra serpentina,* but both *Chelydra serpentina serpentina* and *Chelydra rossignonii rossignonii* appear throughout the work.

There is a list of references to the more important books and papers dealing with turtles, and a short but adequate index is provided. —D. Dwight Davis, *Field Museum of Natural History, Chicago, Ill.*